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May 5, 2008

Via Electronic Submission

Ms. Marlene Dortch  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

RE: CG Docket 03-123, In the Matter of Telecommunications Relay Services  
and Speech-to-Speech Services for Individuals with Hearing and Speech  
Disabilities.

Dear Ms. Dortch:

On April 29, 2008, Penn Pfautz and Mark Lancaster of AT&T, along with Kelby Brick, GoAmerica/HOVRs and Justin Nelson, Dash Carrier Services, participated in the FCC's Numbering Solutions Stakeholder Workshop. The attached information was used during our presentation to the workshop participants.

If you have any questions, please contact the undersigned.

Sincerely,

Toni R. Acton  
Director

Attachment

# Numbering for IP-Based Relay Services

April 29, 2008

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## Introduction

Our common goal is to drive functional equivalence to relay users by providing standard telephone numbers and E911 access by Dec. 31, 2008. There are a few competing proposals.

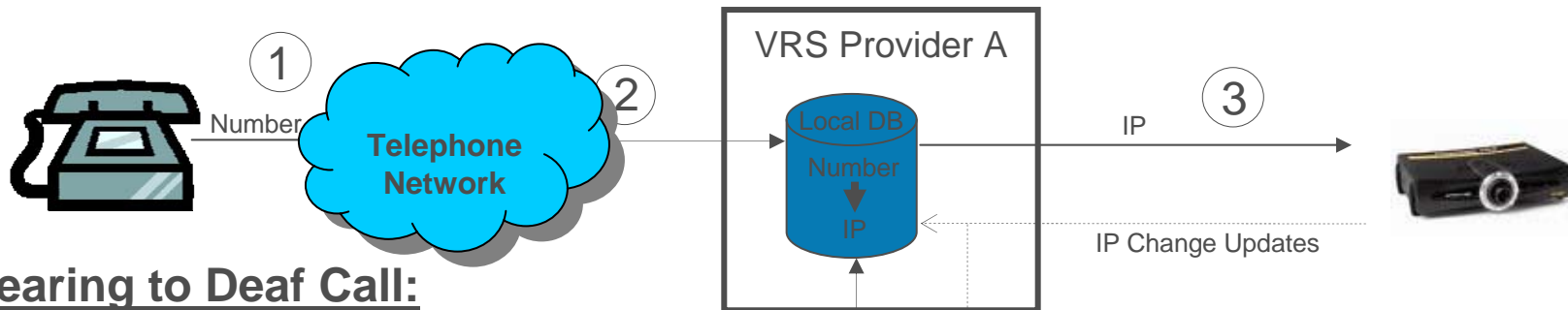
### Proposal Similarities:

- Assign regular 10-digit telephone numbers to relay users
- Implement a central database to support routing by any relay provider to any relay user, user-to-user calls, and IP-based relay services
- Leverage the technology deployed for VoIP for E911

### Proposal Differences:

- User number acquisition: Relay Providers vs. Neutral Third Party
- Database access: Private vs. Shared vs. Public
- Database Technology: NPAC vs. DNS

# Direct Dialed (Hearing to Deaf) Call



## Hearing to Deaf Call:

1. Hearing person can direct dial deaf person's telephone number
2. Call routes to VRS provider chosen by Deaf user
3. VRS provider looks up IP address in local database and completes VRS call to Deaf user.

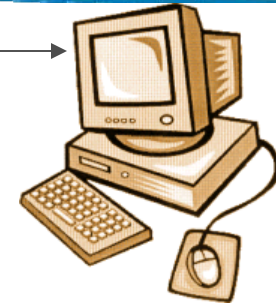
User equipment provides current IP address to chosen relay provider. Relay providers copy this information to the central database where all providers can access it.



Toll Free Number

VRS  
Provider

IP



## Alternate Relay Provider Selection

Number

IP

Number  
↓  
IP

DNS

DNS

Dynamic DNS

NPAC

Number Portability Administration Center



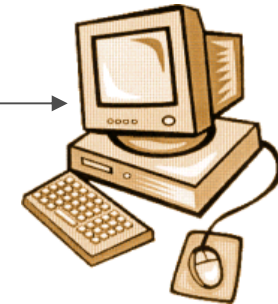
Toll Free Number

VRS  
Provider 1

URI

VRS  
Provider 2

IP



URI  
↓  
IP

URI  
↓  
IP

3<sup>rd</sup> Party

COPY  
Number  
↓  
URI

URI Change  
Updates

NPAC  
Number  
↓  
URI

NPAC

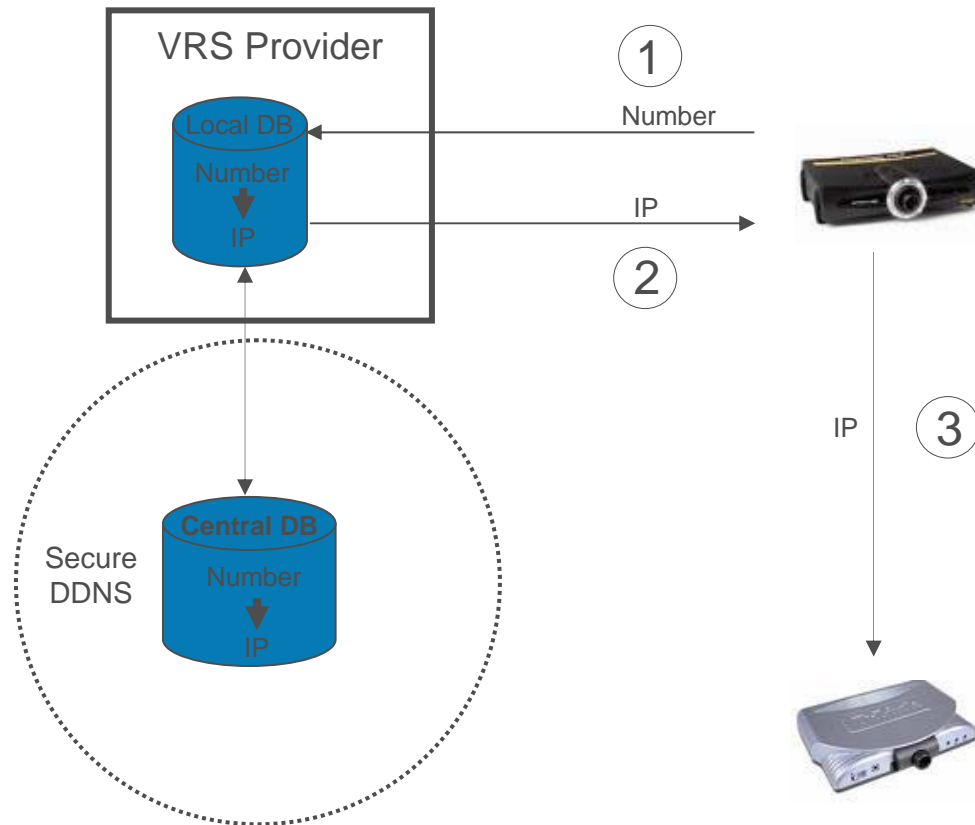
# Direct Dialing (Deaf to Deaf)

## Deaf to Deaf Call:

1. Deaf user dials 10 digit number of friend (not knowing or caring what device they use).

2. VRS Provider queries database to obtain current IP address of friend and returns to VRS user equipment

3. Direct call established to friend using current IP address.



# User IP address management for VRS?

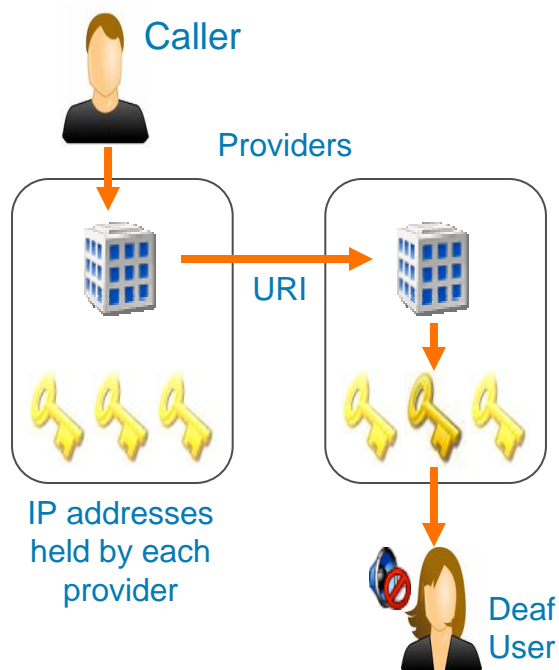


IP Addresses are the keys to reaching deaf users

## Private

### IP addresses held privately by providers

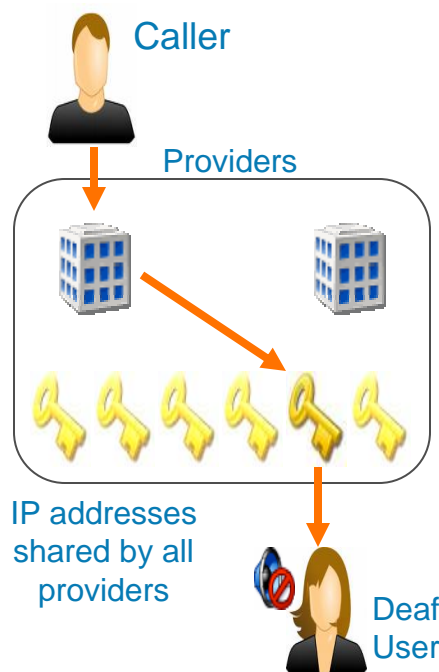
IP addresses, the keys to reaching deaf people, are kept in separate lists by each provider. To reach the called party, the provider handling the call must contact the provider holding the key to complete the call. This method is slower, involves multiple providers for calls, and adds unnecessary signaling steps to the process. It also allows competing providers to monitor each other's customer usage and calling patterns.



## Shared

### IP addresses shared by all providers

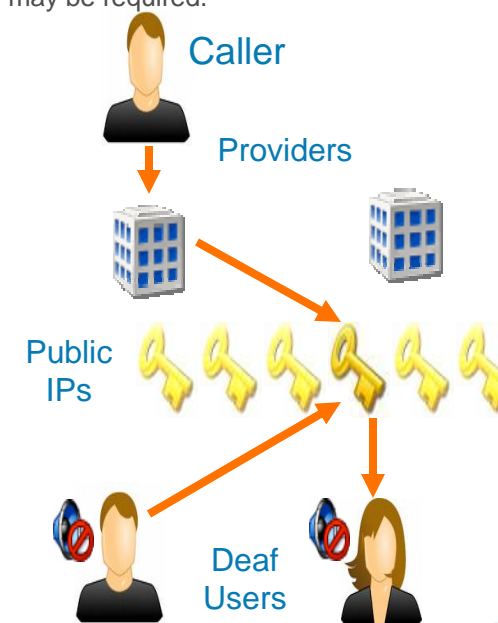
IP addresses, the keys to reaching deaf people, are kept in one list shared by all providers. To reach the called party, the provider handling the call, has direct access to the key to complete the call. Easy for providers with legacy video phones to implement. No waivers required.



## Public

### IP addresses in public list

IP addresses, the keys to reaching deaf people, are kept in one public list open to both providers and users. This allows deaf-to-deaf calls without involving providers, but a public list may expose users to marketing and prank calls. This configuration also greatly increases the number of authorized list users and hence the potential for data inaccuracy. Difficult for providers with legacy video phones to implement. Waivers may be required.

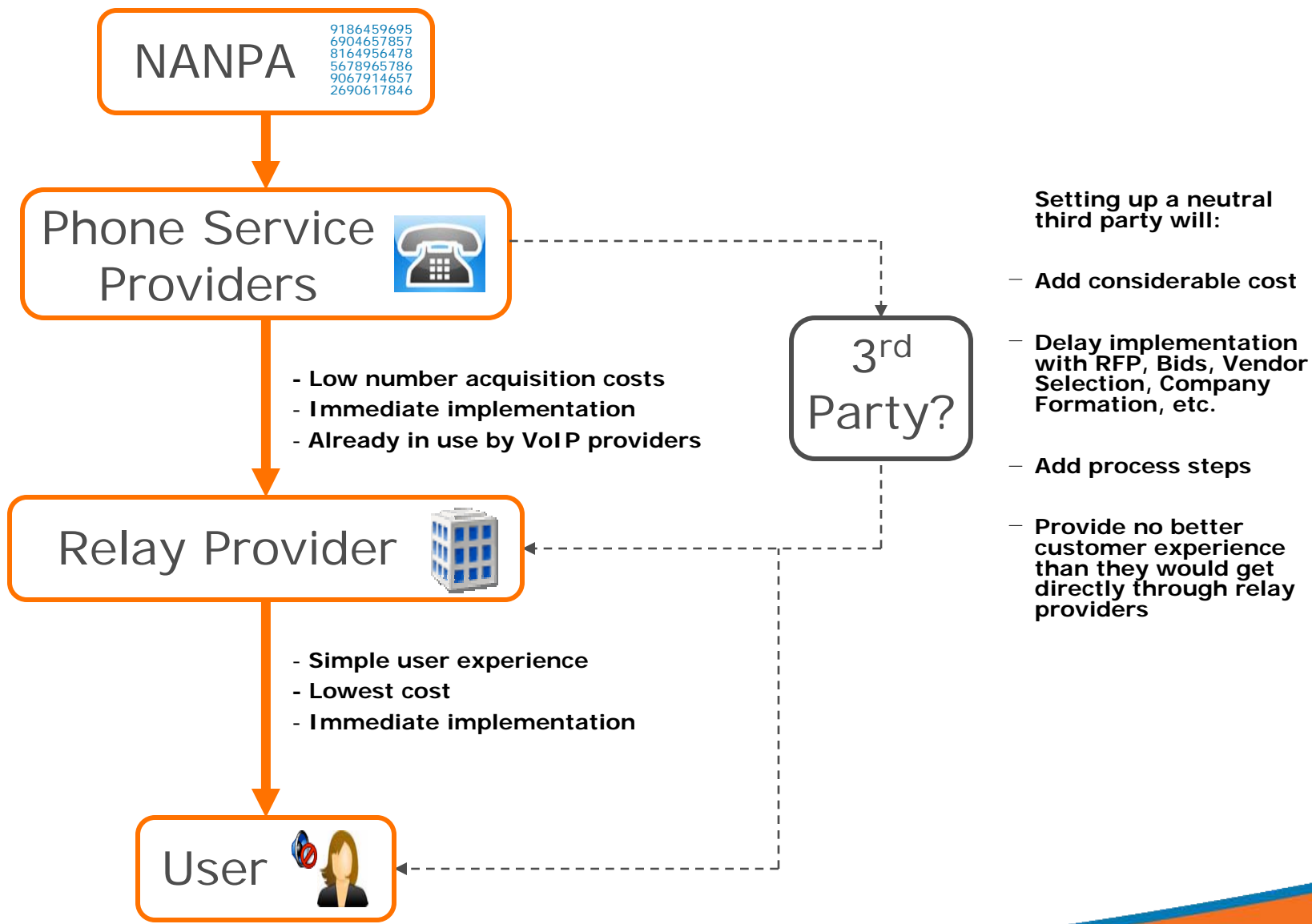


## DNS vs. NPAC

- DNS is Internet standard for phone number to address translation
  - flexible and extensible
  - Many vendors can provide
  - Can be structured under the control of relay service stakeholders
- NPAC is oriented toward telephone networks
  - Note that telephone companies are the primary users and funders of the NPAC but they don't support using the NPAC for this function
  - NPAC is controlled by telephone companies via the NAPM LLC

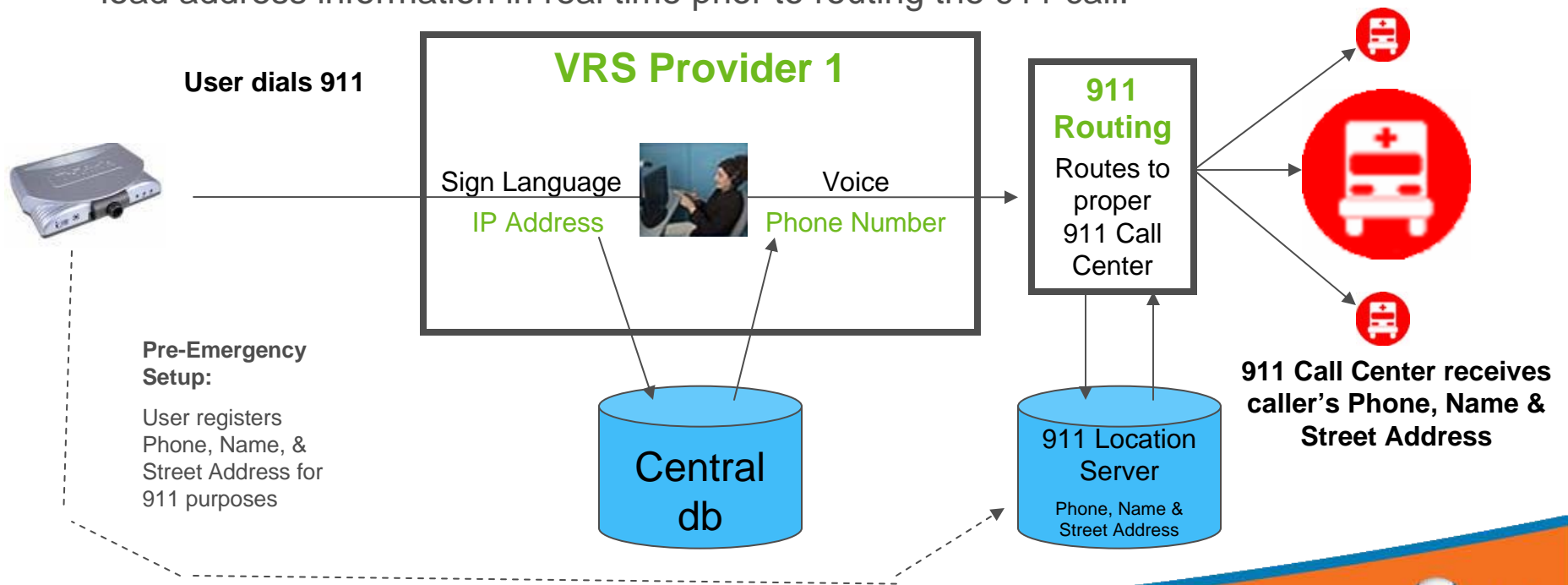


# How do numbers get to users?



# Deaf 911 Call Flow – Leveraging Current Wireless & VoIP 911 Solutions

- When a VRS user obtains her phone number she registers her current street address with the 911 location server – through the VRS provider of her choice.
- On a 911 call, the VRS provider uses the caller's phone number to route call to the 911 service provider for delivery to the appropriate PSAP and interprets, the emergency call for the user & 911 operator. The phone number is also the key for the 911 operator to get the caller location information.
- If caller is not pre-registered, VI will need to obtain location information from caller, load address information in real time prior to routing the 911 call.



# Timeline for solutions

Database Administration	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1) Form Industry Database Administration group																										
2) Develop governance process																										
3) Database Provider specifications																										
4) Pricing Structure																										
5) Database Provider vendor selection process																										
6) Database Provider development																										
7) VRS/IP Relay Provider development																										
8) Database Administration delivery																										
1) Form industry group to develop Governance process, DB Provider specs, VRS/IP Relay Provider Interface specs, Pricing structure, DB Provider admin process, as well as DB Provider selection process (2 weeks). Form subteams as necessary.																										
2) Develop Governance process, including LLC incorporation and membership, if necessary. Include retention of legal counsel (12 weeks).																										
3) Produce DB Provider spec, including interface spec (4 weeks). Note: This step can be worked in parallel with Governance process.																										
4) Develop Pricing structure (4 weeks). Note: This step can begin after initial 4 weeks of DB Provider spec process has begun.																										
5) Produce DB Admin Vendor Selection process and actual selection (8 weeks).																										
6) Create DB Provider database (12 weeks).																										
7) Create VRS/IP Relay Provider database and operations (18 weeks).																										
8) Deliver Database Administration (Total 26 weeks).																										

# Cost

- Database (e.g. Dash quote) \$0.50/month
- Numbers \$1.00/month
- E911 \$1.00 month
- Total: ~ \$2.50/month

## Dash ORD – Timeline/Cost

- Interoperable SOAP API Available - **Today**
- Production API, ENUM, And Web Interface – **June 15, 2008**
- Relay Provider Integration Timeframe –**Less than 60 Days**
  - Dedicated Dash Support Resources/Project Manager
  - Simple Standards Based API Leverages Existing Development Tools
  - Example Code
- Simple Cost Structure
  - Less than \$0.50 Per Number Per Month
  - \$500 Per Relay Provider API Fee
  - No Per Query Fee



# Conclusion

- We believe the AT&T-GoAmerica proposal represents the best set of tradeoffs, BUT
- Remember how much we agree on as well as where we differ
- Understand the separable design decisions that make up each proposal and recognize they are not all or nothing
- Let's settle on an approach and implement

# AT&T Responses to the FCC's Questions

# Numbering directory database administration and access

Please describe your proposed numbering directory database

**Answer: A shared DNS platform updated and accessible by VRS/IP Relay Providers, hosted by a contracted vendor.**

Is it fully centralized or are elements maintained by VRS providers?

**Answer: The data storage is fully centralized to include IP address-to-TN correlation for all VRS/IP Relay Users.**

What information elements are contained in record entries?

**Answer: 10 digit domestic geographic telephone number and associated Internet address with multiple addresses depending on URI record type (containing IP address or screen name), allowing for multiple services per telephone number.**

How static and/or dynamic are elements in the database(s)?

**Answer: Records are updated by VRS/IP Relay Providers as IP information changes. This will be relatively static for some applications (e.g., AOL screen name URI's) versus dynamic for others (e.g., nomadic IP connections).**

How would you propose that an administrator be selected?

**Answer: A method that has been successfully used in both LNP and ENUM database environments could use a VRS/IP Relay-specific Limited Liability Corporation (LLC) that is composed of interested VRS/IP Relay Providers, generating an RFP and selecting a database vendor best satisfying the requirements. Other methods may be available and AT&T is open to expedient governance models that offers autonomy to the stakeholders.**

**In order to meet the FCC required due date of no later than Dec. 31st of this year, the FCC has the ability appoint an administrator. This could be on either an interim or long term basis, much the same way NECA administers much of the Universal Services fund.**



# Numbering directory database administration and access (continued)

Who will have access to numbering directory database(s)

For the purpose of entering or updating information?

**Answer: VRS/IP Relay Providers only.**

For the purpose of retrieving information to complete calls?

**Answer: VRS/IP Relay Providers only.**

By what mechanism will an end-user's IP address be provided to your proposed directory database(s)?

**Answer: By update from VRS/IP Relay Providers initially, maintaining the existing User-Provider relationship.**

How would you propose consensus implementation standards be finalized (e.g., through ATIS, or some other consensus working group)?

**Answer: Given the understood goal of operationalizing this database no later than Dec. 31st 2008, an FCC-designated oversight body (e.g., NANC with its FoN WG) could coordinate a rapid development team. In the alternative, perhaps the TRS Joint Board could supervise this work. Again, there should be great caution in allowing the industry to try to develop consensus on an issue that has already been discussed for this many years already.**

Do you propose to make use of any existing consensus standards? Which ones, and what additional work is needed?

**Answer: .**

**The solution is based entirely on standards already in use in the VoIP or communications industry in general)**

**Database Interface standards include: SOAP; Rest; XML, HTTPS**

**Database structure standards include: DNS & ENUM**

# Numbering Resources

- How will the entity that distributes numbers to end users obtain numbers?
- **Answer: The VRS/IP Relay Providers should distribute numbers which each Provider acquires on behalf of its Users from their chosen Telecommunications/VoIP Provider. AT&T believes this offers opportunity for Providers to differentiate themselves through service delivery, without burdening and elongating the acquisition process through creation of a Number Administrator.**
- How will end users obtain numbers?
- **Answer: Contacting the VRS/IP Relay Provider of their choice, they will either request a new number be assigned for their use, or they will port their existing number in to the underlying Carrier of that Provider. At their option, the User may maintain their own numbering and service independent of a Provider, but must associate that number with a Provider to have their number associated with an IP address in the database.**
- Will end users be required to, or be able to, obtain geographically appropriate numbers?
- **Answer: Yes. In the same way a Hearing person can select the number of their VoIP phone.**
- Will end users be allowed to obtain more than one number?
- **Answer: There is no set limit on numbers per User.**
- Does your proposal require acquisition or distribution of pANI or other “non-standard” numbering resources?
- **Answer: No. Our solution would leverage the existing VoIP 911 infrastructure and systems, no additional effort or development should be required by the industry**

## Number Portability

Please describe how number portability would operate under your proposal.

**Answer: Portability between Providers is at the request of the customer to the new Provider. This is done by changing the record in the central database thought a process similar to that used for 911 records and porting the telephone number between Carriers that serve the Providers, if necessary**

## 911/E911

Does your proposal pose any particular benefits or challenges with respect to implementation of 911/E911 service comparable to that provided by interconnected VoIP service providers?

**Answer: No. It uses the same mechanism as the VoIP model**

## End User Equipment

What, if any, functionality is required at the user's site, and how do you see it being implemented?

**Answer: The User's device must meet current interoperability requirements, but beyond that no new software or hardware is contemplated.**

Does your proposal require any new equipment or modifications to the existing embedded base of end user equipment?

**Answer: No,**

Does your proposal require modifications to the design of forthcoming end user equipment?

**Answer: No, but vendors will likely modify their products to take best advantage of the database service provided. It is desirable if equipment can change the entity to which it delivers IP address updates.**

How is interworking between H.323-compliant and SIP-compliant devices facilitated or achieved?

**Answer: Providers are expected to deliver interworking as required by current interoperability requirements. The database will support both H.323 and SIP addresses.**

## Privacy and Security

How do you propose to authenticate authorized users of the numbering directory database and to secure record maintenance and record access?

**Answer: Access Control Lists and SSL Authentication will authenticate queries; additionally, credentials are required for provisioning**

How will the end users' privacy and online security be ensured? Are additional Commission rules necessary?

**Answer: The database is accessible only by providers and only on per-call basis, besides record creation and modification purposes. The Commission should promulgate rules against use of information for other than call routing.**

## Extensibility

Does your proposal permit the system to scale to allow the entire community of individuals with disabilities to obtain numbering resources?

**Answer: Yes.**



Does your proposal provide particular benefits or propose particular challenges when considering future upgrades?

**Answer: DNS can accommodate a variety of addressing approaches, dynamic or static, as may be required. It is also forward-looking as the main vehicle for Internet name translation.**

Would individuals who are not disabled be eligible to register for numbers under your proposal, now or in future?

**Answer: There is no limitation in this regard, but cost and registration considerations are in play**

# Timeline

Please provide an estimated implementation timeline. Please consider the following in developing this timeline:

How long do you estimate it will take interested parties to finalize consensus standards needed to fully implement your proposal?

**Answer: If the AT&T-GoAmerica proposal is selected there is little further that parties will need to work out and any details should be completed within one month.**

What are the organizational startup requirements for the third party database operator and how long do you estimate they will take?

**Answer: This should not take long as we have two database operators that assert that the databases can be completed in a matter of weeks.**

How long do you estimate it will take for the third party database operator to be up and running?

**Answer: Uncertain, but the Dash comments indicated as little as 2 months for their portion, as an example.**

How long do you estimate it will take VRS providers to implement systems to interact with the third party database?

**Answer: Uncertain, but this should not exceed a couple of months.**

How long do you estimate it will take VRS providers to procure numbering, trunking and other resources necessary to implement your proposal?

**Answer:**

**Numbering should be a matter of a few weeks**

**Trunking – the solutions are based on IP connectivity and thus this should not require long lead times**

**Equipment / integration – this should not require much more than 4 to 6 weeks  
other resources are uncertain.**

If other parties must make changes to implement your proposal, what are those changes and how long do you think it will take them?

**Answer: Each Provider must operationalize customer-facing organizations to acquire and assign numbers, to populate the database and to create back office systems that are specific to their circumstances, so specifics are unknown but they should not be required more than 45-60 days based on VoIP providers' experience.**

What steps, if any, can be completed simultaneously?

**Answer: See draft timeline, slide 10.**

# Cost

What costs, per end user, will be incurred to acquire and distribute telephone numbers?

**Answer: It is expected that telephone number monthly costs may be approximately \$1 using the VoIP Provider approach, and databases costs may be approximately \$0.50 per month. The 911 service cost may be approximately another \$1 per month. There will be other operational costs that Providers will bear .**

What do you estimate to be the cost of new equipment or modifications to the existing embedded base of end user equipment on a per end user basis?

**Answer: No such costs are proposed.**

How are costs to be recovered:

by VRS providers?

**Answer: For valid TRS-compensable costs, through that fund, perhaps categorized as exogenous costs. .**

by the neutral third party administrator?

**Answer: The database administrator cost could either be funded directly by TRS or in fees charged to relay providers which may in turn seek TRS compensation. (if fees are paid by the TRS companies then relay companies could more easily distribute and account for non-deaf numbers which should not be compensated by the fund)**

by other entities impacted by the proposal?

**Answer: Unknown. No other impacts are predicted. But to be clear, the companies providing numbers to the relay company would be compensated by the relay company directly.**

What do you estimate to be the overall cost to the fund?

**Answer: Using an estimated 150,000 VRS users, the cost would be \$375K per month. Adding IP relay or more VRS users would add proportionately.**